

## PATENT ABSTRACTS OF JAPAN

(11)Publication number : 06-031715

(43)Date of publication of application : 08.02.1994

(51)Int.Cl.

B28B 11/02  
E04F 13/08

(21)Application number : 04-209537

(71)Applicant : KOMATSU LTD

(22)Date of filing : 15.07.1992

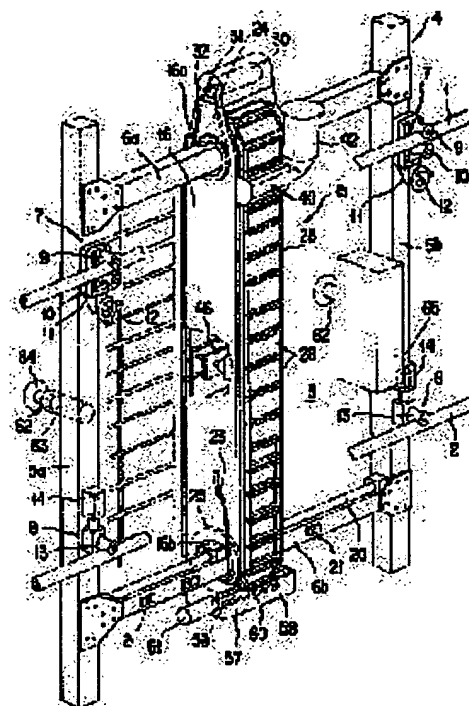
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## (54) PLATELIKE SURFACE FINISHING MATERIAL APPLYING AND CONSTRUCTING APPARATUS

## (57)Abstract:

**PURPOSE:** To facilitate a tiling operation, to reduce the number of steps, to obtain a stable adherence and to provide a simple structure and easy handling by comprising of a plate material conveyor having many plate material holders attached to a crawler and a plate material applying unit for pressing plate materials held by the holders to a surface to be applied.

**CONSTITUTION:** A platelike surface finishing material applying and constructing apparatus comprises a tile conveyor 15 composed by attaching many tile holders 28 to a crawler 26 engaged along a frame 16, and a tile applying unit 46 for pressing tiles held by the holders 28 to a surface to be tiled. The conveyor 15 is laid along the surface to be tiled by suitable means such as guide rails 1, 2, a crane, etc., provided on the surface to be tiled. Tiles are supplied one by one to the holders 28 according to an operating amount, and applied one by one to a wall surface 3 by the unit 46.



## LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the  
examiner's decision of rejection or application converted  
registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of  
rejection][Date of requesting appeal against examiner's decision of  
rejection]

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**CLAIMS**

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[Claim(s)]

[Claim 1] Tabular surface finish material attachment construction equipment characterized by consisting of a plate transport device which comes to attach many plate cages in the endless track band wrapped along with the frame, and plate attachment equipment which forces on the field for plate attachment the plate which is in the frame of this plate transport device, and was held at the plate cage.

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## DETAILED DESCRIPTION

## [Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the tabular surface finish material attachment construction equipment for sticking tabular surface finish material, such as a tile, and plastics material, a secondary stone concrete product, and constructing.

[0002]

[Description of the Prior Art] A craftsman conventionally For example, the approach a tiler sticks one tile at a time on a wall as a method of the construction which stretches a tile, the method of sticking on a wall the sheet which stuck two or more tiles beforehand, Or although there is the approach of slushing mortar etc. and it was carried out focusing on handicraft in this way after attaching a tile in shuttering in the phase which manufactures the wall of a building etc., mechanization is advanced with the latest lack of hand people, and the example is proposed in JP,2-128063,A etc. What was shown in this JP,2-128063,A adsorbs the tile sent out one sheet at a time from the tile hold section by the adsorption hand, and is made to counter the outer wall front face of a building, a tile is stuck to the mortar layer on an outer wall front face by pressure by predetermined stroke actuation by advance of the continuing overhanging member, and he drives a shaker further, and is trying for that sticking by pressure to become dense.

[0003]

[Problem(s) to be Solved by the Invention] However, in the manual case [ according to / a craftsman ], in the construction industry which has the handicap of dirty 3K grade of tight risk in recent years, the problem that labor shortage, such as manual labor and youth laborers, is big is posed. Moreover, equipment became complicated, housekeeping at the time of construction became complicated, and its construction efficiency did not improve so much while it started [ the manpower requirement ], since the thing using the machine proposed in above-mentioned JP,2-128063,A etc. adsorbed the tile sent out one sheet at a time by the hand and stretched in a wall. Moreover, while equipment becomes complicated and serves as a cost rise, the man day remarkable to preparation and clearing up is taken. Furthermore, since equipment is complicated, it becomes expensive equipment and there is a problem in respect of an aspect of practical use or a sustaining cost.

[0004] This invention is what was made in view of the above-mentioned thing. The outer wall of a building, a wall, While being able to do the attachment activity of tabular surface finish material, such as a tile to floor line PC boards, such as a floor line and a foot walk, an ALC plate, etc., continuously and obtaining reduction-ization of easy-izing of the attachment activity of tabular surface finish material, such as a tile, and a man day Handling is also aimed at offering the tabular surface finish material attachment construction equipment which becomes easy, while adhesion of the stable tabular surface finish material is obtained, and structure becomes simply and small and becoming cheap.

[0005]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, the tabular surface finish material attachment construction equipment concerning this invention consists of a plate transport device which comes to attach many plate cages in the endless track band wrapped along with the frame, and tabular surface finish material attachment equipment which comes to push against the field for plate attachment the plate which is in the frame of this plate transport device, and was held at the plate cage.

[0006]

[work --] for A plate transport device is made to meet with the means of adaptation, such as a guide rail prepared in the field for plate attachment, or a crane, by the field for plate attachment. One of this to which one plate is supplied at a time by rating is stuck on each plate cage of a plate transport device at a time with plate attachment equipment at the wall surface. Mortar or adhesives for the field for plate attachment to stick the plate at this time may be beforehand

applied to the field for plate attachment, or is applied to the back guide peg of a plate in a plate transport device according to migration of an endless track band.

[0007]

[The example of fruit \*\*] The example of this invention is explained based on a drawing. This example shows the example which sticks a tile and is constructed. In drawing 1, it estranges from the wall surface 3 of a building, and 1 and 2 are level and are the guide rail of the upper and lower sides prepared in parallel mutually. It is [ the guide rails 1 and 2 under besides ] attached, and they are arranged in the scaffold which consists of a metallic pipe prepared along with the wall surface 3 and which is not illustrated.

[0008] In drawing 1, 4 is the support frame which constituted the door posts 5a and 5b on either side and the up-and-down transversal frames 6a and 6b in the shape of parallel crosses, and the bottom means for supporting 8 and 8 with which engagement support of the migration to the lower guide rail 2 of the top means for supporting 7 and 7 engagement support of the migration to the guide rail 1 of an above top of is enabled is enabled again at the lower part have been formed in each upper part of the door posts 5a and 5b of right and left of this support frame 4. The top means for supporting 7 have two wheels 9 and 10 which roll by the upper and lower sides of a guide rail 1. this -- both -- vertical movement of the bracket 11 which supports wheels 9 and 10 being attained to door posts 5a and 5b, and rotating a handle 12 -- the above -- both -- the height of wheels 9 and 10 -- right and left -- it can adjust now separately. Moreover, the bottom means for supporting 8 consist of a wheel 13 which rolls with the lower guide-rail 2 up side, and energization equipment 14 which carries out spring energization of this wheel 13 to a lower part.

[0009] In drawing 1, 15 is the tile transport device supported free [ migration to the transversal frames 6a and 6b of the upper and lower sides of the above-mentioned support frame 4 ], 16 is the frame made long in the vertical direction, and lower transversal frame 6b is inserted in bottom hole 16b which upper transversal frame 6a prepared in top hole 16a prepared in the upper part of this frame 16 again at the lower part, respectively. The rollers 17 and 17 as shown in drawing 2, before and after being H configuration and preparing in an upper transversal frame 6a order both-sides side at top hole 16a are \*\*\*\*(ed), and the cross-section configuration of the transversal frames 6a and 6b of the upper and lower sides of the above-mentioned support frame 4 is restrained by the cross direction. Moreover, the slide guide bar 20 which has formed the bracket 19 which fitted in bearing 18 in bottom hole 16b, and was prepared in the bearing 18 of this in parallel with transversal frame 6b of the above bottom at the support frame 4 has fitted in free [ sliding ], and a frame 16 is supported by this slide guide bar 20. The positioning member 22 which takes predetermined spacing in the side face of lower transversal frame 6b, and has tooling holes 21 is formed, and stopper pin 23a which engages and releases these tooling holes 21 is prepared at the tip of the stopper lever 23 established in the side face of a frame 16 free [ rotation ]. This stopper lever 23 is energized in the engagement direction with the spring which is not illustrated.

[0010] the upper and lower sides of the frame 16 of the tile transport device 15 -- wheels (sprocket) 24 and 25 -- preparing -- \*\*\*\* -- this -- both -- the endless track band 26 is wrapped around the wheel. This endless track band 26 engages with the guide slot 27 established in the frame 16 as shown in drawing 4, and is guided. It is pitch [ cages / 28 / many / tile ] spacing, and has attached in the outside of the endless track band 26 covering the overall length of the endless track band 26. moreover, the drive sprocket 31 which has carried the drive motor 30 in the upper part of a frame 16, and fixed to the driving shaft of this drive motor 30 -- a chain 32 -- minding -- the above -- it connects with the wheel 24.

[0011] The frame 36 into which it fixes right and left and Tile A fits with the side plates 34a and 34b of order and the side plates 35a and 35b on either side is formed before and after the bottom plate 33 which shows the tile cage 28 attached in the above-mentioned endless track band 26 to drawing 4 and drawing 5, and is attached in the endless track band 26, and this bottom plate 33. Moreover, slots 37 and 37 are formed between the inside of the side plates 35a and 35b on either side, and the both ends of the side plates 34a and 34b of order. The depth of the above-mentioned frame 36 is deeper than the thickness of Tile A, and the thickness of the difference of the depth is plastered with mortar. Moreover, the springs 37a and 37b holding the tile A inserted in the frame 36 are attached and formed in the side plates 35a and 35b on either side at the right-and-left both sides of this frame 36. Moreover, the hole 38 penetrated to the inside of a frame 16 is established in the above-mentioned bottom plate 33.

[0012] The mortar coater 40 which applies mortar to the tile A which fitted in in the above-mentioned tile cage 28 is formed in the tooth back of a frame 16. the trowel which this mortar coater 40 has magnitude which covers the one whole tile cage 28, and prepared space inside -- a member 41 and this trowel -- the mortar storage tank 42 which supplies mortar in a member 41, and the trowel of mortar -- it consists of a flow control valve (not shown) which controls the amount of supply to a member 41. the above -- a trowel -- the trowel for making a spreading side into Taira and others, while regulating the spreading thickness of the mortar applied to the back guide peg of the tile A which showed the member 41 to drawing 4 and drawing 6, and fitted in in the tile cage 28 at the inside -- Pieces 43a and 43b

are formed. a trowel -- the delivery pipe 44 of the mortar storage tank 42 is connected to the side face of a member 41. moreover, a trowel -- the pieces 45a and 45b of a partition which fit into the slots 37 and 37 of the both sides of the frame 36 of the tile cage 28 are formed in the both-sides plate of right and left of a member 41. the trowel from the above-mentioned mortar storage tank 42 -- supply of mortar is performed by Ayr feeding to a member 41.

[0013] In the frame 16, tile attachment equipment 46 is formed free [ migration in the vertical direction ]. This tile attachment equipment 46 is engaging with the guide rail 48 which showed to drawing 4 and drawing 7 , and drawing 8 , and susceptor 47 prepared in the vertical direction in the frame 16 free [ sliding ]. And one flank of this susceptor 47 is combined through bond part material 47a by the endless track band 49 stretched in the vertical direction in the frame 16, and it moves up and down along with the above-mentioned guide rail 48 by driving the endless track band 49 with a drive motor 50.

[0014] And the tile attachment machine 51 is formed towards the wall surface 3 side movable at the cross direction on the above-mentioned susceptor 47. This tile attachment machine 51 consists of the pedestal 52 which engaged with the cross direction free [ migration ] to susceptor 37, the cylinder 53 for moving this pedestal 52, a shaker 54 attached in the pedestal 52, and the sucker 55 and bearing bar 56 which were prepared in the tip side of a pedestal 52. The sucker 55 and housing 56 of this tile attachment machine 51 are penetrated in the hole 38 of the above-mentioned tile cage 28.

[0015] As shown in drawing 1 , the cleaning equipment 57 which cleans the lowest edge of the tile transport device 15 is provided in the lower part of a frame 16. This cleaning equipment 57 consists of the brush 59 in contact with the tile cage 28, an air jet hole 60, and motor 61 grade that drives a brush 59 in the covering member 58 which covers the bottom of the tile transport device 15 from the bottom, and this covering member 58. In addition, the above-mentioned brush 59 may be connected with the revolving shaft 25 of the tile transport-device 15 bottom through a belt etc.

Moreover, water may be collected in the covering member 58.

[0016] Adsorbers 62 and 62 are formed in both the door posts 5a and 5b of the support frame 4. These adsorbers 62 and 42 The bracket 63 which fixed to door posts 5a and 5b, and the rod whose sliding of the cross direction of this bracket 63 was enabled, It consists of a sucker 64 prepared at the tip of this rod, and a rod is advanced with means, such as a cylinder, and the support frame 4 is fixed to a wall surface 3 by drawing in with the vacuum devices which a sucker 64 is made to contact a wall surface 3, and do not illustrate it.

[0017] In drawing 1 , 65 is the control unit attached in the side face of one door-post 5b of the support frame 4, and this control unit 65 consists of the control unit 66, a control section 67, and a display, as shown in drawing 9 . A control unit 66 consists of a conditioning switch 68 which inputs tile attachment conditions, such as the number of sheets of the tile stuck by one actuation, longitudinal-joint width of face, bed-joint width of face, an expansion joint location, expansion joint width of face, and a joint rate, with a digital switch, a ten key, etc., and an actuation switch group 69 which operates each actuation of mortar spreading, tile attachment, etc. The control section 67 consists of ROM70, RAM71, and CPU72 grade.

[0018] And a signal is inputted into the control section 67 of the above-mentioned control unit 65 from the sensor section 73, and the output signal calculated based on this input signal is outputted to a mechanical component 74 and a display 75. The 1st rotation distance robot 76 which measures the vertical direction (direction of X) distance of the tile cage 28 from the criteria location where the above-mentioned sensor section 73 was taught, The 2nd rotation distance robot 77 which measures the migration length of the vertical direction of the tile attachment machine 51, The pressure sensor 78 which measures the tile attachment force in the cylinder 53 of the tile attachment machine 51, It consists of a distance robot 201 which detects the tile attachment distance in the cylinder 53 of position-sensor 79a which detects the location of the specific tile cage 28, position-sensor 79b which detects the vertical location of a specific tile attachment machine, and the tile attachment machine 51.

[0019] Moreover, there is flow-control-valve 80 grade which controls the drive motor 30 which drives the shaker 54 of the tile attachment machine 51 and the endless track band 26 of the tile transport device 15 as a mechanical component 74, the drive motor 50 which moves the tile attachment machine 51 up and down, and the flow rate of mortar. Furthermore as a display 75, there are an alarm 81 and drop 82 grade.

[0020] The operation in the above-mentioned configuration is explained below. In drawing 1 , horizontal migration of the support frame 4 which supported the tile transport device 15 is carried out along with guide rails 1 and 2 by the operator to a tile attachment construction location. At this time, the stopper pin 22 at the tip of the stopper lever 23 of the tile transport device 15 is engaged with the tooling holes 21 of the support frame 4. the wheel of the means for supporting 7 and 8 of the upper and lower sides which \*\*\*\* to guide rails 1 and 2, without basing migration of the above-mentioned support frame 4 on human power -- while equipping the section with a motor, a rotation distance robot is prepared and it may be made to perform migration and location detection, positioning, and a halt automatically.

[0021] An instruction needle (not shown) is attached up and down, and adjustment of the perpendicular posture of the

support frame 4 is made by doubling the instruction needle of these upper and lower sides and the datum line by which Japanese ink attachment was carried out beforehand at the wall surface 3 of the tile transport device 15. And the alignment at this time is made by shaking the support frame 4 at right and left by turning a handle 12 at least for one side of the top means for supporting 7 of the right and left prepared in both the door posts 5a and 5b of the support frame 4, and moving this up and down, and, thereby, the tile transport device 15 is located perpendicularly. Here, adjustment of a perpendicular posture may be controlled to carry out posture adjustment automatically using well-known techniques, such as an inclination sensor and a motor, although handle actuation is performing. And the support frame 4 is fixed to a wall surface 3 by operating the adsorbers 62 and 62 formed in the both sides of the support frame 4 in this condition, and adsorbing the sucker 64 of this at a wall surface 3. Moreover, the above-mentioned instruction needle is removed in this condition.

[0022] Next, while supplying mortar to the mortar storage tank 42, it supplies one tile A at a time to each tile cage 28 which is located in the direction which does not face a wall surface 3, i.e., a tooth-back side, and is located below the mortar coater 40 by the operator. Each tile A is held with springs 37a and 37b in a frame 36.

[0023] While rotating the endless track band 26 of the tile transport device 15 little by little by switch actuation of the actuation switch group 69 of a control device 65 in this condition, a flow control valve 80 is controlled by the control section 67, and mortar is supplied to the mortar coater 40. Thereby, the mortar of predetermined thickness is applied to the back guide peg of the tile A in the tile cage 28 which passed the mortar coater 40. At this time, an instruction needle is attached in the tile cage 28 of the head which is in close [ of the tile with which mortar is applied ], and this instruction needle is set by the attachment instruction location by which Japanese ink attachment is carried out beforehand at the wall surface 3 by viewing by the migration by the side of the wall surface 3 of this tile cage 28. The control section 67 of a control unit 65 is made to memorize this instruction location by pushing the actuation switch of the actuation switch group 69 in this condition. The account instruction needle of Gokami is removed.

[0024] Tile attachment conditions (tile number of sheets, longitudinal-joint width of face, bed-joint width of face, joint rate, etc.) are made to input and memorize with the conditioning switch 68 of a control device 65 in the state of the above. The instruction location and the above-mentioned tile attachment conditions which carried out [ above-mentioned ] storage are calculated by CPU72, and when setups separate from the range by the tile transport device 15 which can be constructed, abnormalities are told through an alarm 81. At this time, actuation is returned an instruction location and by setting up tile attachment conditions again.

[0025] After the input of the above-mentioned tile attachment conditions, by pushing the actuation switch for mortar spreading of the actuation switch group 69, the endless track band 26 rotates applying mortar to the back guide peg of the tile A in the tile cage 28 with the mortar coater 40, and the tile A which applied mortar to the location required for the tile attachment calculated by CPU72 is moved.

[0026] At this time, Tile A is supplied by the operator one by one in the tile cage 28 below the mortar coater 40. Moreover, Ayr is used as a feeding means of mortar. In addition, other well-known means, such as a screw, may be used for feeding of this mortar. the mortar coater 40 -- the trowel of this -- it is prevented by [ by which it divides and Pieces 45a and 45b pass along the slots 37 and 37 of the both sides of a frame 36 ] having been prepared in the both sides of a member 41 that mortar overflows into the side of the back guide peg of Tile A.

[0027] After the thing of the head of the tile cage 28 with which the tile A with which mortar was applied by the 1st rotation distance robot 76 is held checks having come to the location required for tile attachment, rotation of the endless track band 26 and spreading actuation of mortar stop. A drive motor 50 driving to the actuation and coincidence which have applied this mortar, and the tile attachment machine 51 moving up and down within a frame 16, and detecting the location of this by the 2nd rotation distance robot 77, it checks having come to the count result location in a control section 67, and stops. The tile attachment machine 51 is located in the backside [ the tile A stuck first ] at this time.

[0028] In this condition, by pushing the actuation switch for tile attachment of the actuation switch group 69, the tile attachment machine 51 is extruded, where it moved to the front to susceptor 47 in the cylinder 53 and the tile A in the tile cage 28 is adsorbed with a sucker 55, it is pushed by the bearing bar 56, is excited with a shaker 54, and is stuck on a wall surface 3. The tile attachment machine 51 which ended attachment retreats, and the actuation which checks the above-mentioned drive motor 50 which moves upwards so that it may be located in the backside [ the tile A A, for example, the tile of immediately a top, which it is going to stick on a degree ] having driven, and having come to the count result location, and is suspended is repeated. The grasping means of the above-mentioned tile A may be replaced with a sucker 55, and may use a hand.

[0029] At this time, when the pitch between tile cage 28 differs from the pitch of the tile A to stick, the endless track band 26 rotates and it carries out regulating automatically of the pitch (bed-joint width of face). Also in this case, a location is calculated and regulating automatically of the tile attachment machine 51 is carried out so that it may come

to the backside [ the tile A which it is going to stick ].

[0030] After the tile A for the set-up number of sheets is stuck on a wall surface 3, the endless track band 26 is rotated, and it carries out regulating automatically so that the tile cage 28 of the head containing the tile A with which the mortar in this condition is applied may be moved to the tile attachment instruction location set up last time, and stops after adjustment termination. Next, it positions by pulling out the stopper pin 22 which has stopped the tile transport device 15 on the support frame 4, and moving this tile transport device 15 to the following tiling section by the operator, and it is engaged and stopper pin 23a is fixed in that location. The number of the tooling holes 21 by the side of the engaged support frame 4 prepares much stopper pin 23a according to the above-mentioned positioning location. After carrying out positioning immobilization of the tile transport device 15 as mentioned above, the above-mentioned tile attachment process is repeated.

[0031] While each tile cage 28 of the tile transport device 15 passes cleaning equipment 57 at the time of the above-mentioned actuation, it cleans up.

[0032] When the above-mentioned operating procedure is shown in a flow chart, it comes to be shown in drawing 10 . Namely, tile attachment conditions are set up with the conditioning switch 68 in the control unit 66 of a control device 65 (step 1). Operate the endless track band 26 of the tile transport device 15 after that, and the tile cage 28 is moved (step 2). An operator judges whether the instruction needle attached in the tile cage 28 suited Japanese ink attachment of a wall surface 3 (step 3), and if suited, the actuation switch for the tile attachment instruction locations of the actuation switch group 69 will be turned ON (step 4). Thereby, tile attachment conditions are calculated by the control section 67 (step 5). at this time, setups judge within the limits which can be enforced, or ? by the control section 67 (step 6), and if they are NO, it will carry out an alarm -- having (step 7) -- the -- it resets (step 8).

[0033] On the other hand, if it is the range which can be constructed, the actuation switch of \*\* with [ of the actuation switch group 69 ] mortar finish will be turned ON (step 9). Mortar is applied to the back guide peg of the tile A which rotation actuation of the endless track band 26 of the tile transport device 15 was carried out by this, and was put in in the tile cage 28 (step 10), and Tile A moves to a location required for tile attachment. Subsequently, if the switch for tile attachment of the actuation switch group 69 is turned on (step 11) The tile attachment machine 51 operates and tile attachment is performed (step 12). If attachment of predetermined number of sheets is completed, the tile transport device 15 will be moved within the support frame 4 (step 13). It judges whether at this time, all tile attachment activities within this support frame 4 were completed (step 14), and if still, (12) will be repeated from the above-mentioned step (2).

[0034] When it is judged that the tile attachment activity within the support frame 4 was completed at the above-mentioned step (14), after canceling immobilization by the adsorber 62, horizontal migration of the support frame 4 is carried out (step 15), and top means for supporting adjust the posture of a frame, and if attachment conditions check after that to a wall surface 3 with an adsorber 62 (step 14), and this changes, and it does not change to step 1, it will shift to step 2, respectively. Moreover, at the time of mortar spreading of the above-mentioned step 10, an operator does sequential carrying in of the tile A into the tile cage 10 below the mortar coater 27 (step 10').

[0035] Although the above-mentioned example showed the example which supported the tile transport device 15 free [ sliding ] to the slide guide bar 20 prepared in the support frame 4 as shown in drawing 1 and drawing 2 As shown in drawing 3 , it \*\*\*\*s instead of the above-mentioned slide guide bar 20. A shaft 85, enabling free rotation And it connects with the drive motor which is not illustrated, and prepares, and the nut member 86 screwed in this is formed in a frame 16, and to the support frame 4, it moves automatically, the tile transport device 15 is united, and it may be made to perform location detection, positioning, and a halt by rotating the above-mentioned \*\*\*\* shaft 85. In addition, at this time, it is engaged and the linear guide 88 which formed the guide member 87 in the top face of lower transversal frame 6b as shown in drawing 3 , and was prepared in this at bottom hole 16b of a frame 16 is supported for the tile transport device 15 in this part, enabling free sliding. Furthermore, you may make it hang this support frame 4 with a crane etc. instead of supporting the support frame 4 which supports the tile transport device 15 in this example to guide rails 1 and 2. Moreover, it is good as for two or more trains in the train of the tile cage 28 of the endless track band 26 of the tile transport device 15. In this case, the mortar coater 40 and two or more sets of tile attachment equipment 46 can also be located crosswise in a line according to it, and are arranged.

[0036] Moreover, although the above-mentioned example showed the example which supported the tile transport device 15 free [ migration to guide rails 1 and 2 ] through the support frame 4, you may make it support tile transport-device 15' free [ migration to the direct guide rails 1 and 2 ], as shown in drawing 11 . in this case -- a tile -- a transport device - 15 -- ' -- constituting -- a frame -- 16 -- ' -- both sides -- a tile -- a transport device -- 15 -- ' -- a guide rail -- one -- two -- supporting -- the upper and lower sides -- means for supporting -- seven -- ' -- seven -- ' -- eight -- ' -- eight -- ' -- preparing -- having -- further -- this -- the upper and lower sides -- both sides -- the section -- a tile -- a transport device -



- 15 -- ' -- a wall surface -- three -- fixing -- a sake -- an adsorber -- 62 -- ' -- fixing -- having -- \*\*\*\* .

[0037] and to above-mentioned tile transport-device 15', like the transport device 15 in the 1st previous example The mortar coater 40 inside frame 16' to this tooth-back side again tile attachment equipment 46 Furthermore the lower part is equipped with cleaning equipment 57, and the rest is the same as the thing of the 1st example of the above only by considering operation actuation of this as "tile transport-device horizontal migration" as a step (13) instead of the step (13) in the flow chart shown in drawing 10 , (14), and (15). although horizontal migration of the tile transport device at this time is performed by the operator -- the wheel of vertical means for supporting -- while equipping the section with a motor, a rotation distance robot is prepared and it may be made to perform migration and location detection, positioning, and a halt automatically.

[0038] Drawing 12 and drawing 13 show the 3rd example of this invention. In drawing 12 , 90 is a tile transport device and 91 is the endless track band wrapped around the wheels (sprocket) 92 and 93 by which bearing was carried out to the both ends of the frame which this tile transport device 90 does not illustrate. And the tile cage 28 of the same configuration as what was shown in this endless track band 91 in the 1st and 2nd example of the above covers two or more trains, and are formed over the longitudinal direction perimeter. [ many ] This tile transport device 90 is provided in the shape of level, as shown in drawing 12 , and it is made to have countered the stuck members (a PC board, ALC plate, etc.) 94 by which that bottom side is laid above the floor level. And the rotation driving gear 95 is connected with the shaft of one wheel 92.

[0039] It is the above-mentioned tile transport-device 90 bottom, and the tile feeder 96 which supplies Tile A to coincidence is formed in each tile cage 28 at the improvement style side in the method of rotation at each train. This tile feeder 96 consists of the chute 97 which counters each train of the tile cage 28 of the endless track band 91, a tile receipt case 98 prepared in the upstream of this, and a tile feed gear 99 formed in the posterior part side of the tile receipt case 98, with the tile feed gear 99, turns one one-sheet tile A of each train at a time up, and sends out that back guide peg for it to chute 97.

[0040] It is the tile transport-device 90 bottom, and opposite arrangement of the adhesives coater 100 has been carried out at the downstream of the above-mentioned tile feeder 96. Although this adhesives coater 100 has composition which applies adhesives to the back guide peg of each tile A supplied to each tile cage 28 and that configuration is not shown, it consists of the roller which applies to a tile side the adhesives put into the usual configuration, for example, an adhesives container, and this or a brush, a trowel, etc.

[0041] Moreover, inside the tile transport device 90, the tile attachment equipment 101 countered and formed in the background of the tile cage 28 of each train is formed. On the frame 114 supported by the hand of cut of the endless track band 91 movable, and this frame 114, along with the above-mentioned frame 114, it is carried crosswise [ of the endless track band 91 ] free [ migration ], and this tile attachment equipment 101 consists of the same tile attachment machine 105 as the thing of the 1st example of the above by being supported by the slide rail 102 and the feed screw 103 as shown in drawing 13 , and rotating a feed screw 103 by the motor 104. 106 is a motor for moving this tile attachment machine 105 crosswise, and he is trying to drive the belt 107 which stuck by this motor 106 and was connected to the vessel 105. Other well-known means may perform the above-mentioned migration means, without restricting to a motor, a feed screw, and a belt. In addition, the above-mentioned tile attachment machine 105 may be formed crosswise [ of the endless track band 91 ] only several minutes of the tile cage 28 of this direction.

[0042] Automatic control of each component of the tile attachment construction equipment of the above-mentioned configuration is carried out, it operates by actuation of the actuation switch of a control panel 107 etc., and Tile A is stuck on the top face of the stuck member 94.

[0043] Drawing 14 shows the 4th example of this invention. this example rolls almost the endless track band 91 of the tile attachment construction equipment of the 3rd example shown in drawing 12 -- both -- a wheel 110 attaches in the both ends of each shaft of a wheel, the endless track band 91 is rotated, the tile cage 28 moves, the location detection equipment put side by side for the wheel 110 detects a tile attachment location, and a tile A sticks on a floor line etc. with tile attachment equipment 101 running by itself or by pushing. Automatic control of these equipments is carried out, and they operate by actuation of an actuation switch etc.

[0044] Although the above-mentioned example showed the example which sticks Tile A on a wall surface 3, Tile A does not remove as constructed plate top surface finish material of this invention, and plastics material, a stone, a secondary concrete product, etc. contain the plate formed in the fixed form.

[0045]

[Effect of the Invention] The plate transport device which comes to attach many plate cages in the endless track band wrapped along with the frame according to this invention, By being in the frame of this plate transport device, and consisting of plate attachment equipment which forces on the field for plate attachment the plate held at the plate cage



While being able to do the attachment activity of the tabular surface finish material to the floor line of the outer wall of a building, a wall, a floor line, a foot walk, etc., a PC board, an ALC plate, etc. continuously and obtaining reduction-ization of easy-izing of a tile attachment activity, and a man day Handling also becomes easy, while adhesion of the stable tabular surface finish material is obtained, and structure becomes simply and small and becoming cheap.

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[Translation done.]

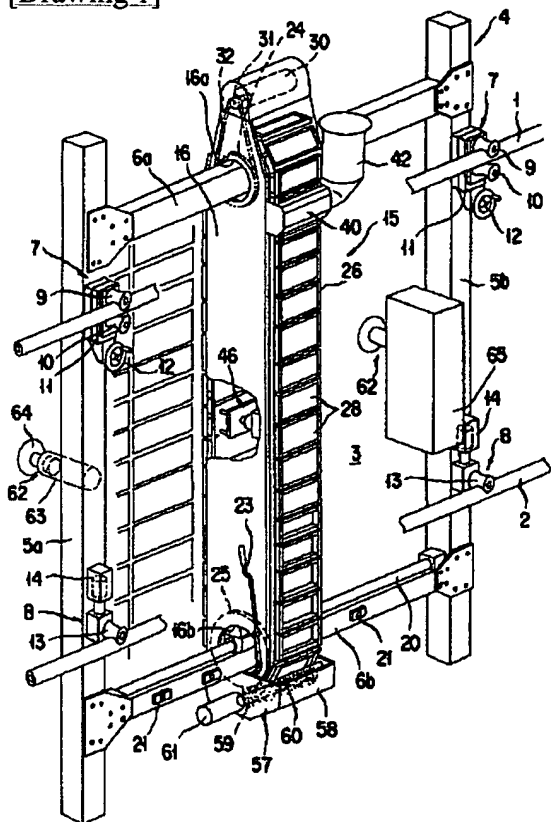
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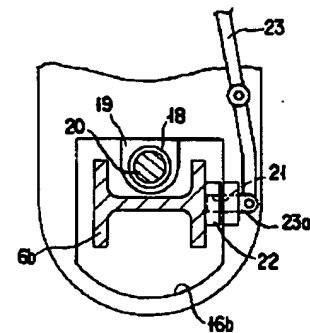
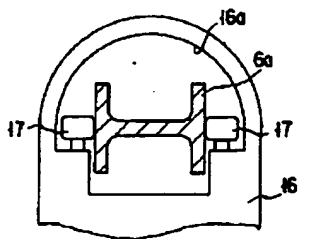
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2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

## DRAWINGS

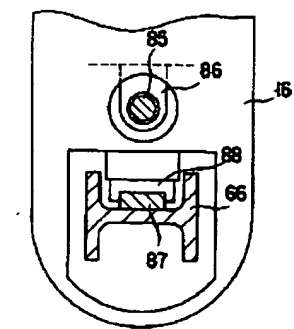
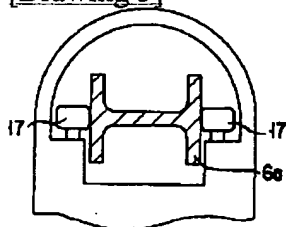
[Drawing 1]



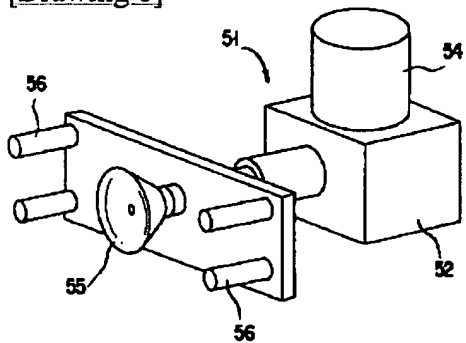
[Drawing 2]



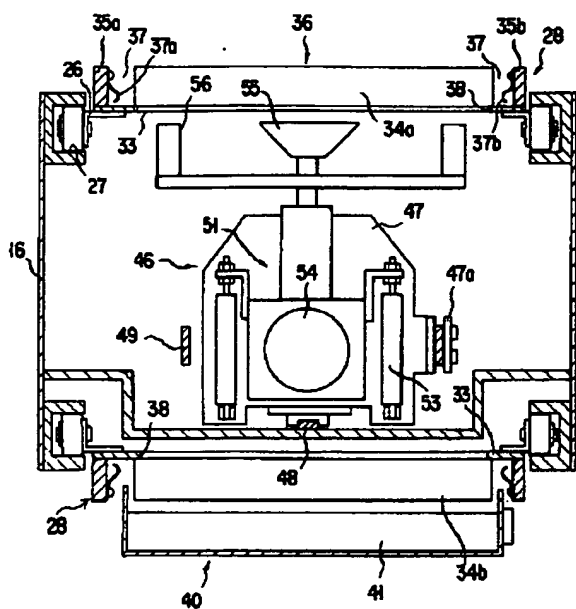
[Drawing 3]



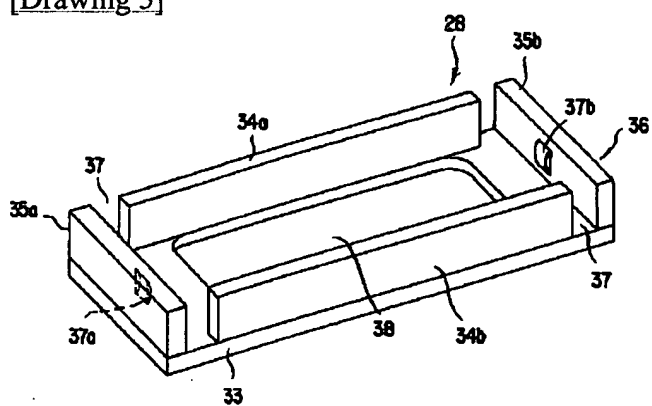
[Drawing 8]



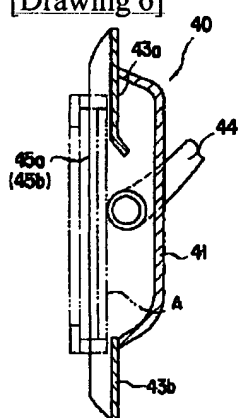
[Drawing 4]



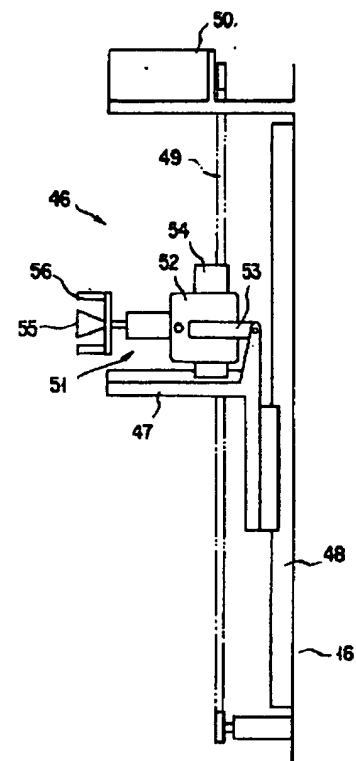
[Drawing 5]



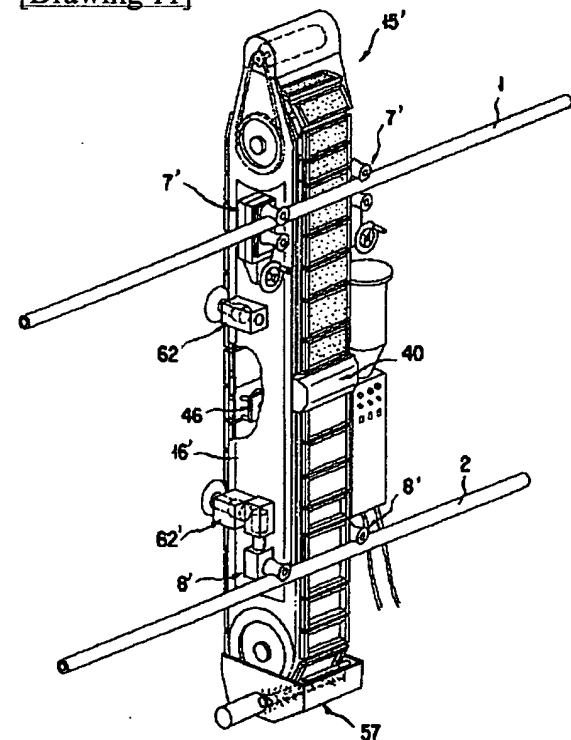
[Drawing 6]



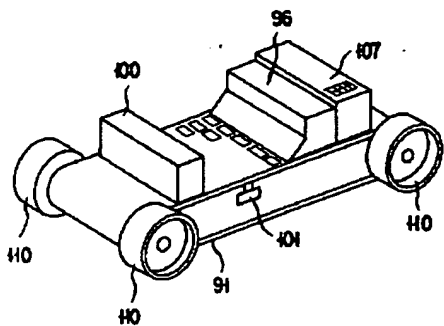
[Drawing 7]



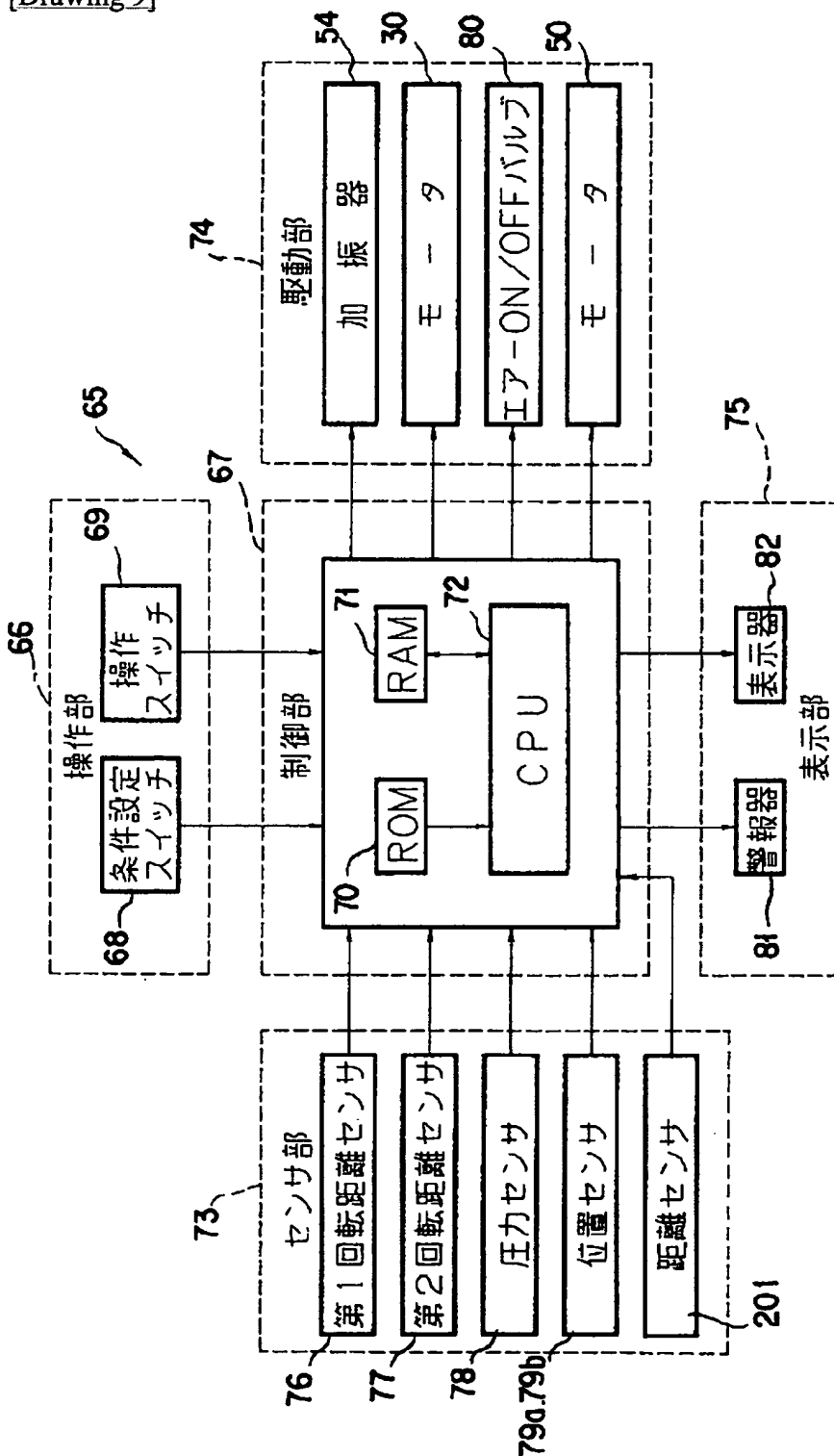
[Drawing 11]



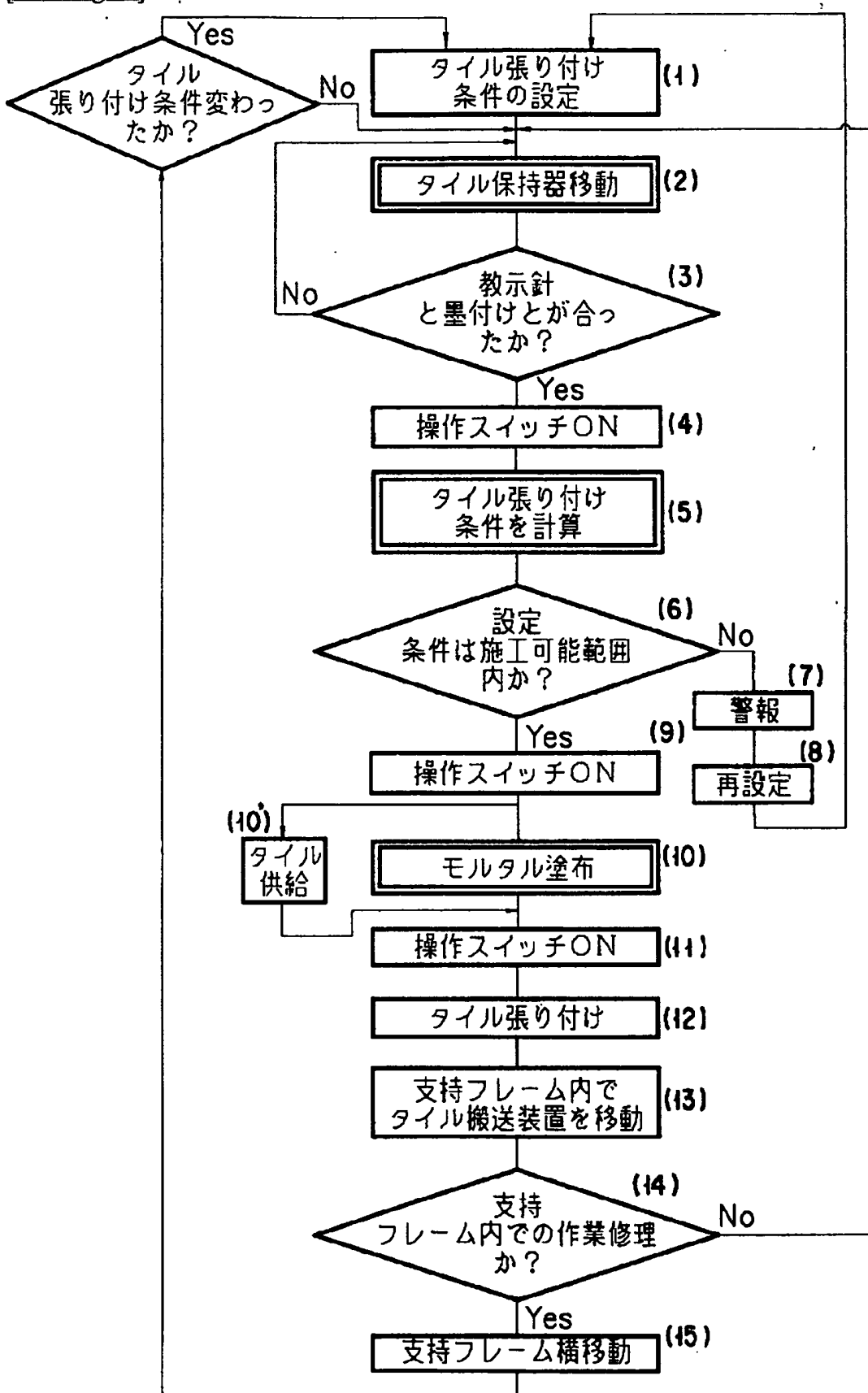
[Drawing 14]



[Drawing 9]

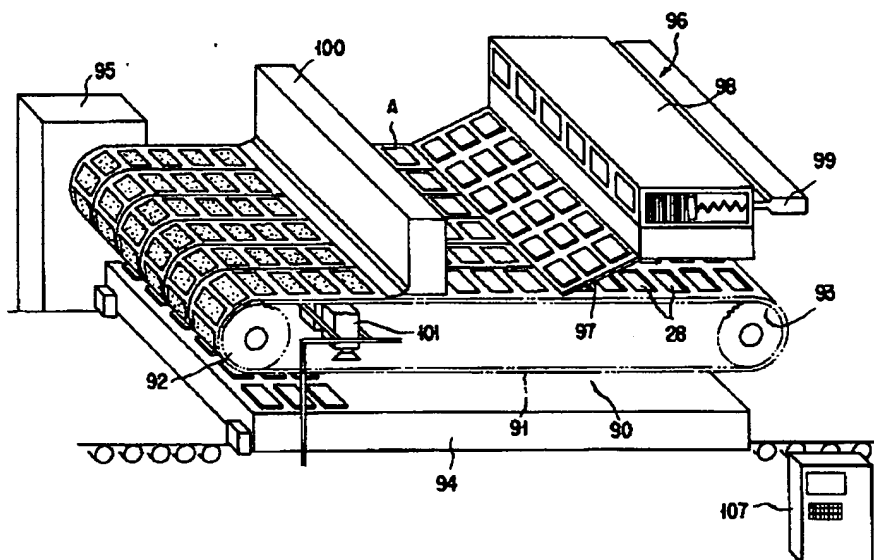


[Drawing 10]

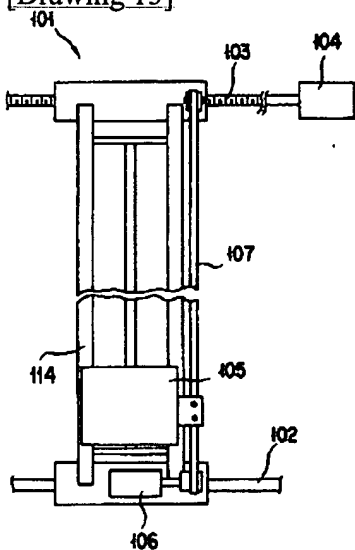


[Drawing 12]





[Drawing 13]



[Translation done.]

(19)日本国特許庁(JP)

(12) 実用新案公報(Y2)

(11)実用新案出願公告番号

実公平6-31715

(24)(44)公告日 平成6年(1994)8月22日

(51)Int.Cl. <sup>3</sup>	識別記号	庁内整理番号	F I	技術表示箇所
H 0 1 G 9/00	3 1 1	9375-5E		
9/05	C	9174-5E		

請求項の数1(全 3 頁)

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(43)公開日	平成3年(1991)4月26日	審査官	大澤 孝次

(54)【考案の名称】 有極性チップ形電子部品

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【実用新案登録請求の範囲】

【請求項1】 外装樹脂で被覆した有極性チップ型電子部品素子の陽極リードから対向する一対の外装樹脂外側面まで引き出した陽極端子と、前記電子部品素子の陰極層から前記外装樹脂の前記陽極端子の引き出された外側面まで引き出した陰極端子とを有し、前記陽極端子と前記陰極端子は並列にかつ同一極性の端子はそれぞれ対角線上に配置されていることを特徴とする有極性チップ形電子部品。

【考案の詳細な説明】

〔産業上の利用分野〕

本考案は有極性チップ型電子部品に関し、特に外装樹脂によって電子部品素子の外部を被覆したチップ型電子部品に関する。

〔従来の技術〕

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第4図、第5図は従来の有極性チップ形電子部品の外観斜視図である。従来この種のチップ形電子部品は、素子から導出する陽極リード(図示省略)に板状の陽極端子13を接続する。一方、素子の表面に披着形成した陰極層(図示省略)に陰極端子14を半田付け等の手段で接続固定した後、絶縁性を有する外装樹脂15で被覆し、陽極端子13と陰極端子14に切断、折り曲げ等の加工を施して製造されている。

尚、第4図は、特許願昭61-303109号による有極性チップ形電子部品の一例である。

〔考案が解決しようとする課題〕

上述した従来の有極性チップ形電子部品は、回路基板等の電子部品への実装時において、電子回路の極性と電子部品の陰極が逆となる誤実装を生じやすく、その結果近年の電子回路の高付加価値及び高信頼度化のニーズに応

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じられなくなって来ている。

本考案の目的は、逆実装を防止でき、その結果電子部品の性能劣化の発生とこれによる電子回路動作不良の不具合発生を皆無とすることができ、かつ回路基板への実装効率の向上が達成できる有極性チップ形電子部品を提供することにある。

#### 〔課題を解決するための手段〕

本考案の、有極性チップ形電子部品は、外装樹脂で被覆した有極性チップ型電子部品素子の陽極リードから対向する一対の外装樹脂外側面まで引き出した陽極端子と、前記電子部品素子の陰極層から前記外装樹脂の前記陽極端子の引き出された外側面まで引き出した陰極端子とを有し、前記陽極端子と前記陰極端子は並列に、かつ同一極性の端子はそれぞれ対角線上に載置されていることを特徴として構成される。

#### 〔実施例〕

次に、本考案の実施例について図面を参照して説明する。第1図は本考案の有極性チップ型電子部品の一実施例（固体タンタルコンデンサ）の内部構造を示す外観斜視図、第2図は第1図の状態の素子に外装樹脂を被覆した外観斜視図である。固体電解コンデンサの素子1は、タンタル粉末成形体の同一方向二側面部に、平押し成形法等の成形技術を用い、タンタル線を両側面に互いに偏心させた位置へ植立させた後焼結してなる焼結体を、誘電体形成、半導体層形成、陰極導体層形成等順次加工処理したものである。このとき一方の陽極リード2上には、焼結体と同様に誘電体、半導体層、陰極導体層が形成されているため、希塩酸で溶解し後工程の接合の妨害とならない様にする。又、陽極リードの植立部に絶縁性の樹脂を塗布しておくことと溶解時のレベル出しが容易となる。

この素子1に植立した陽極リード2と陽極端子3を電気溶接にて接合する。陰極端子4は素子1の陰極層6の上面に載置し、かつ、陽極端子3と同一平面をなすように断面

状に加工してある。素子1の上面で陽極端子3と平行になる様配置した陰極端子4は、導電性接着剤又は高温半

田で陰極層6と固着する。

引き続き、エポキシ樹脂等の外装樹脂5をモールド成型法により外装被覆する。陽極、陰極はともに外装樹脂5の内部で電氣的に接続され、外装樹脂5の同一方向二外側面に並列して配置し、導出してある。

第3図(a)、(b)は本考案の実施例を示す外観斜視図である。第3図(a)は、陽極、陰極端子3、4を所定の寸法に切断し、外装樹脂5の側面に沿ってほぼ直角に折り曲げた後、底面に沿って折り曲げた例である。

第3図(b)は陽極、陰極端子3、4を外装樹脂5の側面に沿ってほぼ直角に折り曲げた後、底面と逆方向に折り曲げた例である。

#### 〔考案の効果〕

以上説明したように本考案は、素子から導出する陽極端子及び陰極端子を外装樹脂側面の対向する位置に並列にかつ同一極性の端子をそれぞれ対角線上に配置する構造とすることにより、

(1) 回路基板などの電子回路への実装に当って、電子部品の左右を間違えても、陽極端子と陰極端子の極性は、電子回路の極性と一致し、逆実装による電子部品の性能劣化の発生とこれにより電子回路動作不良の不具合発生は皆無とすることが出来る。

(2) 電極端子は一方にそろっている為、従来の四方向端子構造と比較し、回路基板への実装効率の向上とさらに外装形状が正方形であっても、逆実装による不具合発生を防止出来る。

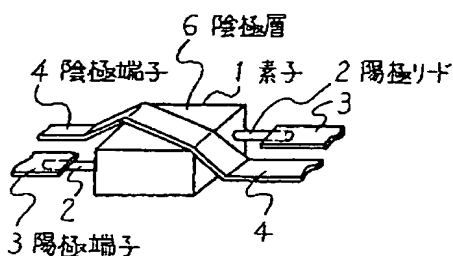
等の効果がある。

#### 〔図面の簡単な説明〕

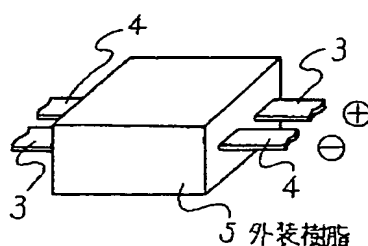
第1図は本考案の有極性チップ形電子部品の素子の斜視図、第2図は第1図の素子に外装樹脂を施した有極性チップ形電子部品の斜視図、第3図(a)、(b)は陽極、陰極端子を折り曲げ加工した本考案による他の実施例の斜視図、第4図、第5図は、従来の有極性チップ形電子部品の一例の外観斜視図である。

1……素子、2……陽極リード、3、13……陽極端子、4、14……陰極端子、5、15……外装樹脂、6……陰極層。

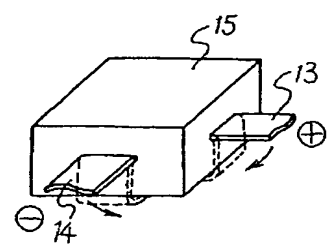
【第1図】



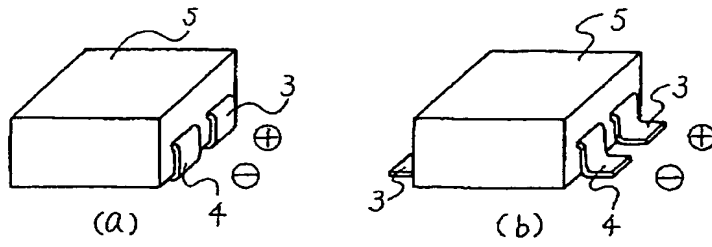
【第2図】



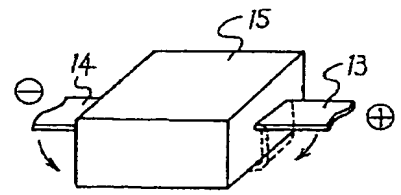
【第4図】



【第3図】



【第5図】



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